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ABSTRACT

Thirty-five kindergarten and 28 prekindergarten children were studied to determine the amount of forgetting that children experience in different learning situations. Two types of attendance scheduling patterns were used: (1) a full-day, alternate-day schedule; and (2) a half-day, every-day schedule. A relative balance existed between children's age and sex in both schedules. Randomly grouped, the children were presented a lesson and interviewed either 1, 2, or 5 days later. Four standardized tests were also administered. Results demonstrated a drop in recall between the 1-day and the 2-day groups in all aspects investigated. The 5-day group performed better than the 2-day group on initial recall of lesson components, but not on recall of lesson component details (with the exception of recall of a story). Three of the four standardized tests were found to correlate with children's recall ability. Implications of the study were seen to concern appropriateness of alternate-day scheduling for all children and the need to identify accommodations teachers must make in curriculum content and teaching methods. (Author/BJD)

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Kindergarten Scheduling:

What Will Children Forget?

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Running head: KINDERGARTEN SCHEDULING

Abstract

The amount of forgetting kindergarten children might experience in every-day and alternate-day scheduling was investigated. Children attending two differing schedules were randomly grouped, presented a lesson and interviewed either one, two or five days later. Four standardized tests were also administered. Results demonstrated a drop in recall between the one-day and the two-day groups in all aspects of the study. The five-day group performed better than the two-day group on initial recall of lesson components, but not on recall of lesson component details with the exception of recall of a story. Three of the four standardized tests were found to correlate with children's recall ability. Implications of this study are directed at the appropriateness of alternate-day scheduling for all children and the need to identify accomodations teachers must make in curriculum content and teaching methods.

Kindergarten Scheduling:

What Will Children Forget?

During the past decade more and more school districts in the United States have shifted from half-day every-day (HDED) kindergarten scheduling to full-day alternate-day (FDAD) schedules. In a recent survey of twelve midwestern states (Finkelstein, 1983) full-day alternate-day scheduling was reported in 39% of the school districts in Minnesota, 25% in North Dakota, 22% in Iowa, 18% in Ohio, 14% in Wisconsin, 5% in Kansas, and 3% in Illinois. In Iowa, full-day alternate-day scheduling increased from 18% in 1980-81 to 22% in 1981-82. Transportation costs have almost always accounted for this shift.

Research studies attempting to demonstrate the advantages of one type of scheduling over the other have yielded inconsistent results. In a review of research comparing HDED and FDAD schedules Stinard (1982) concluded that there is no answer as to whether one schedule is better than another. It may be more meaningful to ask whether changing from HDED to FDAD will have any detrimental effects on children.

A concern often voiced among teachers regarding FDAD scheduling is that the children will experience difficulty remembering from one session to the next (Schulz, 1981; Wisconsin Department of Public Instruction, 1980). Indeed time lapses between sessions can be as long as five days. The purpose of this study, therefore, was to investigate how much information children would forget within time intervals typically encountered in HDED and FDAD scheduling. The following research questions were posed:

1. Can differences be found in the total number of lesson components recalled

by four and five-year-old children one, two and five days after lesson information was presented?

2. Can differences in children's recall be found among different types of lesson components one, two and five days later?

3. Can differences be found in children's recall of details about each lesson component one, two and five days later?

4. Can differences in recall ability be found between age or sex groups?

5. Will children already experiencing different kindergarten schedules demonstrate different recall abilities?

6. Can a relationship be found between children's recall ability and standardized tests?

Method

Subjects and Design

The subjects were 63 children enrolled in a prekindergarten/kindergarten program at a midwestern university laboratory school. Thirty-five of the children were kindergarteners; 28 were in their prekindergarten year. Thirty children were male; 33 were female. Two types of daily scheduling patterns were used in the program: a full-day alternate-day schedule and a half-day every-day schedule. Twenty-six of the children attended the FDAD program; 37 attended the HDED program. A relative balance existed between age and sex in both schedules. The study was conducted in the spring of the school-year.

The subjects were categorized by age, sex and attendance schedule pattern and from these three categories were randomly placed into three groups. Each group was to be studied across one of three time intervals: one day, two days,

or five days. These three time intervals were chosen to reflect the possible extremes of session interval in HDED and FDAD scheduling. Each group was further split into two subgroups, resulting in a total of six lesson groups. Each of these six lesson groups was presented with the same lesson by the same teacher. This same teacher also interviewed each child individually. Two of the lesson groups were interviewed one day after the lesson presentation, two other groups were interviewed two days later, the remaining two groups were interviewed five days after the lesson presentation.

Four standardized tests were administered during the period the study was conducted: the Information test and the Sentences test of the WPPSI, the Metropolitan Readiness Test and the Visual Sequential Memory test of the ITPA. Scores on these tests were compared with children's recall performance on various aspects of this study.

Materials and Procedure

Each lesson group was taken into a separate classroom and presented a teacher-led lesson. The lesson consisted of five components: an action song, a picture book, an abstract concept, four Japanese character cards and a "feely box" containing six objects. These components were chosen to reflect typical curriculum content in a kindergarten program (the Japanese character cards represented new symbols). All lesson components were carefully screened to be sure that they were new to the children. Each lesson group was presented the lesson in an identical fashion. Individual interviews were conducted in the same classroom. The lesson procedure and interview format were pretested in a separate university early childhood setting with the same age children.

Results and Discussion

1. Can differences be found in the total number of lesson components recalled one, two and five days after lesson information was presented?

Each child was first asked to recall everything that occurred during the lesson using the following question: "Tell me everything you remember that we did when we came to this room the other day." Children most frequently recalled three of the five lesson components. When analyzed by different interview groups, the one-day and the five-day groups recalled three lesson components most frequently. Two lesson components were most frequently recalled by the two-day group. These frequencies are contained in Table 1.

Insert Table 1 about here

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2. Can differences in children's recall be found among different types of lesson components one, two and five days later?

The book was the most frequently recalled lesson component (84.1%) by all the subjects, the "feely box" was second (74.6%), the Japanese characters, third (59.2%), and the song, fourth (34.9%). The abstract concept was remembered by only one child and was dropped from further data analysis. When recall was considered for the different time intervals, some shifting of order was seen. The book continued to be the most frequently recalled component and the song, the least frequently recalled component. Table 2 contains this data.

Insert Table 2 about here

Frequency of recall for the subjects in the three time groups was compared with the frequency of each component not being recalled. Chi-square analysis was done using a 2 x 3 contingency table (df = 2). Statistically significant differences among the three time groups were found for all lesson components except the "feely box": song (χ^2 = 8.69, one-tailed $p < .01$), book (χ^2 = 6.07, one-tailed $p < .025$), Japanese characters (χ^2 = 10.8, one-tailed $p < .005$).

3. Can differences be found in children's recall of details about each lesson component one, two and five days later?

Following the initial recall question, children were questioned about the specific details of each lesson component in the following manner: "We did sing a song (hear a story, see some Japanese words, etc.). Tell me everything you remember about the song (book, etc.)." Means and standard deviations were calculated for each lesson component. The Scheffe Multiple Range procedure (Nie et al., 1975) was used to determine if statistically significant differences in recall could be found among the one, two and five day groups. Table 3 contains these findings.

Insert Table 3 about here

All lesson component details experienced a drop in recall across the three time intervals with the exception of the book. The drop in recall was greatest for the details about the song. The "feely box" details experienced the second greatest drop in recall. The Japanese character details were generally well remembered. Recall of the book details did not reveal the same pattern. Details recalled by the five-day group yielded a slightly higher mean value than the

one-day group.

4. Can differences in recall ability be found between age or sex groups?

The means of children's recall on total number of lesson components, specific component details, and a "total recall sum" were compared using t-tests. The "total recall sum" was established by adding the number of lesson details recalled about each lesson component. Older children performed significantly better than the younger children on: total number of lesson components recalled, $t(61) = 1.78$, one-tailed $p < .05$; details about the Japanese character cards, $t(61) = 3.69$, one-tailed $p < .005$; recall of objects in the "feely box", $t(61) = 2.80$, one-tailed $p < .01$; and "total recall sum", $t(61) = 1.98$, one-tailed $p < .05$ and approaching .025.

Analysis of children's recall by sex revealed only one difference of statistical significance. Girls recalled the "feely box" objects better than boys, $t(61) = 3.037$, $p < .02$.

5. Will children already experiencing different kindergarten schedules demonstrate different recall abilities?

The means of children's recall on total number of lesson components, specific component details, and the "total recall sum" were compared using t-tests. Only the recall of lesson component details regarding the song revealed a significant difference, $t(61) = 1.88$, $p < .10$, in favor of the FDAD children.

6. Can a relationship be found between children's recall ability and standardized tests?

The four standardized tests were examined for correlations with the number of lesson components recalled in the initial question and the "total recall sum".

Correlations yielding p values greater than .05 were found for the Metropolitan Readiness Test, the Information test and the Sentence test. Pearson correlation coefficients are contained in Table 4.

Insert Table 4 about here

When analyzed by time intervals, the Metropolitan Readiness Test remained consistently steady in correlating with recall ability, especially as related to the "total recall sum": one-day group, $r = .43$, $p = .02$; two-day group, $r = .37$, $p = .04$; and five-day group, $r = .56$, $p = .008$.

This study has attempted to investigate the amount of information that will be forgotten by young children of prekindergarten/kindergarten age. Common components of a teacher-led group lesson were used as one means of investigating the effects of time upon recall.

The findings of this study demonstrate that forgetting does occur and, in general, increases with time. Song recall appears to suffer most, both in initial recall and in specific detail. Symbols such as the Japanese characters and visual-tactile experiences such as the "feely box" appear to suffer less memory loss. Stories appear to be remembered very well, both in initial recall and in specific detail. Research has demonstrated increased ability to recall material about which inferences can be drawn based on an individual's personal knowledge (Kail, 1979) and about which semantic linkages can occur (Perlmutter and Lange, 1978). The five-day group performed very well on story recall. This finding may reflect previously postulated beliefs that time has nothing to do with

forgetting and memory may actually improve with time (Inhelder, 1969; McGeoch, 1942). Interference theory would suggest that what happens during a time interval, the occurance of competing experiences, may be determining variables in forgetting (Bugelski, 1979). Both of the five-day lesson groups experienced a two-day weekend and a half-day of nonattendance on Friday.

Older children remember better than younger children, supporting long held beliefs that memory develops with age (Yendovitskaya, 1964). There appears to be little difference between the sexes in recall ability. The particular school scheduling pattern a child is experiencing also appears to have no significant effect upon memory as investigated in this study. This latter finding further suggests that children who have experienced an alternate-day schedule for over seven months have not accomodated to this pattern as reflected in their ability to recall any better than their peers attending school every day. The positive correlation of standardized test scores such as the Metropolitan Readiness Test indicates that such tests may be good predictors of children's recall ability from session to session. A further implication may be that children with lower standardized test scores who are placed in alternate-day schedules will suffer more forgetting and thrive less than similar scoring peers in every-day schedules.

Some limitations must be considered in generalizing the findings of this study: the size of the groups in each time interval, the possibility of sampling error in spite of random selection, slight variation in lesson presentations even though efforts were made to avoid variation, individual children's levels of attending and individual receptive and expressive language development, and general limitations of the interview procedure. Memory is a very complex, multi-faceted

set of abilities tapped only superficially by this study.

The forgetting of curricular content by children in differing kindergarten schedules deserves further research. This study suggests that children in alternate-day full-day schedules will experience less recall from session to session than children in half-day every-day schedules. Teachers working in alternate-day schedules need to be aware of the types and intensity of probable memory loss and be able to adjust their curriculum and teaching methods appropriately.

References

Bugelski, B. R. (1979). Principles of learning and memory. New York: Praeger Publishers.

Finkelstein, Judith M. (1983). Results of kindergarten scheduling practices: Midwestern state survey. Cedar Falls, IA: Price Laboratory School Publications.

Inhelder, B. (1969). Memory and intelligence in the child. In D. Elkind and J. Flavell (Eds.), Studies in cognitive development. New York: Oxford University Press.

Kail, Robert. (1979). The development of memory in children. San Francisco: W. H. Freeman and Company.

McGeoch, J. (1942). The psychology of human learning. New York: Longmans.

Nie, Hull, Jenkins, Steinbrenner and Bent. (1975). Statistical package for the social sciences (SPSS). 2nd edition. New York: McGraw Hill.

Perlmutter, Marion and Lange, Garrett. (1978). A developmental analysis of recall-recognition distinctions. In Peter A. Ornstein (Ed.), Memory development in children. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Schulz, Glen E. (1981). Kindergarten scheduling: Full day - alternate days or half day - every day. Urbana-Champaign: University of Illinois Educational Resources Information Center. (ERIC Document Reproduction Service No. ED 201 413)

Stinard, Thomas A. (1982). Synopsis of research on kindergarten scheduling: half-day, everyday; full day, alternate day; and full day, everyday. Urbana-Champaign: University of Illinois Educational Resources Information Center. (ERIC Document Reproduction Service No. ED 219 151)

Wisconsin Department of Public Instruction. (1980). A comprehensive study and evaluation of three types of kindergarten programs, final report. Urbana-Champaign: University of Illinois Educational Resources Information Center. (ERIC Document Reproduction Service No. ED 201 384)

Yendovikskaya, T. V. (1971). Development of memory. In A. V. Zaporozhets and D. B. Elkonin (Eds.), The psychology of preschool children. (John Shybut and Seymore Simon, Trans.). Cambridge, MA: The Massachusetts Institute of Technology Press. (Original work published 1964)

Table 1

Number of Lesson Components Recalled Across Three Time Intervals

Number components	1-day group[a]	2-day group[b]	5-day group[c]
One	1	5	2
Two	4	10	3
Three	14	6	11
Four	3	0	0
Five	0	0	2

[a] n = 22. [b] n = 21 (two children were unable to recall any components). [c] n = 18.

Table 2

Percentage of Group Recall of Lesson Components Across Three Time Intervals

Lesson components	1-day group[a]	2-day group[b]	5-day group[c]
Song	59.0*	21.7	22.2
Book	95.4*	69.6	88.9
Japanese characters	50.0*	26.0	77.8
Feely box	77.3	69.6	77.8

[a] n = 22. [b] n = 23. [c] n = 18.

*p < .025, one-tailed.

Table 3

Means of Recall of Component Details Across Three Time Intervals

Lesson component details	1-day group[a]	2-day group[b]	5-day group[c]
Song	2.73**	1.39	1.06
(range 0 - 6)	(1.75)	(1.70)	(1.66)
Book	3.77	3.17	3.89
(range 0 - 8)	(1.85)	(1.70)	(2.05)
Japanese characters	2.64	2.17	1.94
(range 0 - 4)	(1.33)	(1.53)	(1.76)
Feely box	2.82*	2.04	1.78
(range 0 - 6)	(1.00)	(1.26)	(.81)

Note. Standard deviations are included in parentheses.

[a] n = 22. [b] n = 23. [c] n = 18.

* significantly different to 5-day group a $p < .05$.

** significantly different to both groups at $p < .05$.

Table 4

Relationship of Children's Recall to Standardized Tests[a]

	Information test	Sentence test	Visual Seq. Memory test	Metropolitan Read. Test
Number lesson components	r = .3002*	.3130**	-.0816	.2314*
Total recall sum	r = .5364***	.3435**	-.0355	.4654***

[a] n = 63.

*p < .05. **p < .01. ***p < .001.